Space Weather Forecast

Issued on Friday, 28 January 2022 at 00:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Slight chance Minor Geomagnetic Storm, mainly today or tomorrow (28th or 29th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low. There are five numbered sunspot regions. AR2936 remains the largest and most complex. All the remaining regions on the visible disc are magnetically simple, mostly weak, small and stable. However, despite having barely visible spots AR2938 produced the most recent Common class flare. Two un-numbered spot regions persist in the northwest quadrant, unchanged and small and weak, along with two areas of plage on the visible disc. No Earth-directed CMEs have been observed.

Solar Wind / Geomagnetic Activity: The solar wind has continued to fluctuated between slightly elevated and elevated levels, ending the day around 500 km/s The magnetic field has been relatively weak, with the important north-south direction variable and also weak. Geomagnetic activity has been Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain Low, with a slight chance of Moderate flares. There are five numbered sunspot regions on the visible disc, with the two most active regions currently in the northeast.

Solar Wind / Geomagnetic Activity: There is one CME on the Earth-Sun line that has been assessed, but currently expected to pass close to Earth around 29/0000 UTC, although a glancing impact is possible. A further weak CME may brush Earth on the 30th, but this is lower confidence. Between the potential CME arrivals, and also the influence of a slight enhancement from CH47 through today, solar winds are expected to be slightly elevated to elevated, likely peaking around 550km/s, before gradually easing to become background to slightly elevated levels through day 4 (31st). Geomagnetic activity is expected to be Quiet to Unsettled increasing occasionally Active today, tomorrow and during day 3 (30th) with a slight chance of Minor Storm intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	20	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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